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Paper Abstract

Name : Neville 1. Marzwell,M.S. 198-219

Position/Title: SectionStaff, Robotic Systems **and** Advanced Computer Technology

Affiliation: **NASA**/ JetPropulsi **on** Laboratory

Address: **4800** Oak **Grove** Drive
Pasadena, **California** 91109-8099

Phone Number (81 8) 354-6543 **Fax Number:** (818) 393- 500-/

Gov't Agency/Lab The Subject Technology Was Developed By/For:
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Paper Title: **A CAD-based model-driven sensorized robot planning and execution for object oriented programming,**

Category: Simulation/VirtualReality

Description (use additional sheet if necessary) :

This paper describes **a** telerobotic **cent.rc)] system** whichintegrates image processing, force reflection, **anti** computergraphics. Thesyst **cm** is desi gned **t o** operate in uncert ain envi ronme nts having wel] defined objects. The syst em is composed of **a 6** degrees-of-freedom **force:** feedback hand-controller, **an** operator cont.ro1 **stat.** ion a1"1d machine vision al gori thms. The syst cm connects physics] world at tributes with graphical world at tributes **by** applying computer vision to wel] def i ned entit ies **and by** applying 6 degre- **of**-freedom manipulations to graphical objects . Making **t** he appropri **at** e **connect. i** ons, **o r** est ablishing the correspondence between realiti **es, f** aci 1 itates efficient operat i on in graphical worlds whi1e maintaining accurate manipulations **in** the physi cal world. **successful** operati **ons** in **the?** physical worl d depend on **bot h** vi **sua]** feedback provi ded **by** video **and tact** ile feedback supplied **by** the hand - control1er. The syst em **has** been desi gned to support **both** semi - aut onomous operations using **man- i n-** the-l **oop anti** ful **1 y autonomy** using **f** unct ional **scripts** . 'The system's abilit y to oper**at.** e **in** uncert **ain** envi **r** onments **facilitates more** dynami **c** utilization of rob**c)**t**s i n many** applic **at. i c)ns** including material **handling,** hazardous materi **al** disposal, **and** manufacturing applications. The ut i i izat i on **of** the **above** described **t**echnologies **i n** telerobot **i cs cent.rc)] has proven** inval uable in other specif icapplicati **ons** such **as** molecul **ar** model **i** ng, bomb **fuse** removal , **anti** automot i ve manuf ac tur i ng .